



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/841,493	04/24/2001	Eric Pierre de Rouffignac	5659-06500/EBM	4047

7590 10/31/2002

DEL CHRISTENSEN
SHELL OIL COMPANY
P.O. BOX 2463
HOUSTON, TX 77252-2463

EXAMINER

KRECK, JOHN J

ART UNIT

PAPER NUMBER

3673

DATE MAILED: 10/31/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/841,493

Applicant(s)

DE ROUFFIGNAC ET AL.

Examiner

John Kreck

Art Unit

3673

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2619-2657 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 2619-2657 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 05 March 2002 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6, 10, 11, 12, 13, 14, 15 6) ☐ Other: ____

Art Unit: 3673

DETAILED ACTION

The Art Unit location of your application in the USPTO has changed. To aid in correlating any papers for this application, all further correspondence regarding this application should be directed to Art Unit 3673.

An interview was conducted with Eric Meyertons on 8/19/02 for a related application. During this interview, it was determined that applicant's definition of hydrocarbons was meant to include fossil fuels; which may also include oxygen, nitrogen, or sulfur in their molecular structures; but not to include minerals such as trona. Although this definition is somewhat broader than the generally accepted chemist's definition; it generally corresponds to the definition in the petroleum industry. It was also agreed that "at least about 7" heat sources per production well is meant to give some flexibility where large numbers of production wells are used, and the "about" was not meant to apply to the case of a single production well. It was also determined that applicants' definition of "non-condensable hydrocarbon" also applies to "non-condensable component".

The amendments dated 10/1/01 and 3/11/02 have been entered.

Claims 2619-2657 are pending in this application.

Specification

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is

Art Unit: 3673

requested in correcting any errors of which applicant may become aware in the specification.

Drawings

The proposed drawing correction and/or the proposed substitute sheets of drawings, filed on 3/5/2002 have been approved. A proper drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The correction to the drawings will not be held in abeyance.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

1. Claims 2619-2657 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over copending applications (including the present application): 09/840,936; 09/840,937; 09/841,000; 09/841,060; 09/841,061; 09/841,127; 09/841,128; 09/841,129; 09/841,130; 09/841,131; 09/841,170; 09/841,193; 09/841,194; 09/841,195; 09/841,238; 09/841,239; 09/841,240; 09/841,284; 09/841,285; 09/841,286; 09/841,287; 09/841,288; 09/841,289; 09/841,290; 09/841,291; 09/841,292; 09/841,293; 09/841,294; 09/841,295; 09/841,296; 09/841,297; 09/841,298; 09/841,299; 09/841,300; 09/841,301; 09/841,302; 09/841,303; 09/841,304;

Art Unit: 3673

09/841,305; 09/841,306; 09/841,307; 09/841,308; 09/841,309; 09/841,310; 09/841,311; 09/841,312; 09/841,429; 09/841,430; 09/841,431; 09/841,432; 09/841,433; 09/841,434; 09/841,435; 09/841,436; 09/841,437; 09/841,438; 09/841,439; 09/841,440; 09/841,441; 09/841,442; 09/841,443; 09/841,444; 09/841,445; 09/841,446; 09/841,447; 09/841,448; 09/841,449; 09/841,488; 09/841,489; 09/841,490; 09/841,491; 09/841,492; 09/841,493; 09/841,494; 09/841,495; 09/841,496; 09/841,497; 09/841,498; 09/841,499; 09/841,500; 09/841,501; 09/841,502; 09/841,632; 09/841,633; 09/841,634; 09/841,635; 09/841,636; 09/841,637; 09/841,638; and 09/841,639.

37 CFR 1.78(b) provides that when two or more applications filed by the same applicant contain conflicting claims, elimination of such claims from all but one application may be required in the absence of good and sufficient reason for their retention during pendency in more than one application. The discussion below sets forth the Office's basis for its determination that each of these ninety applications contains at least one claim that conflicts with another one of the related co-pending applications identified above. Each of these ninety applications includes the same specification and collectively these ninety applications present over five thousand claims. The Office has shown that each of these ninety applications contains at least one claim that conflicts with another one of the related co-pending applications identified above, and an analysis of each of five thousand claims in the ninety related co-pending applications would be an extreme burden on the Office requiring tens of thousands of claim comparisons. Therefore, the Office is requiring applicant to resolve the conflict between these applications and comply with 37 CFR 1.78(b) by either:

- (1) filing a terminal disclaimer in each of the related ninety-one applications terminally disclaiming each of the other ninety applications; or,

Art Unit: 3673

(2) provide a statement that all claims in the ninety applications have been reviewed by applicant and that no conflicting claims exist between the applications. Such a statement must set forth factual information to identify how all the claims in the instant application are distinct and separate inventions from all the claims in the above identified ninety applications.

See MPEP 804.02 IV for a discussion of multiple double patenting rejections and the requirements for a single terminal disclaimer.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 2619, and 2621-2623 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bennett (U.S. Patent number 3,680,633) in view of either one of Camacho, et al. (U.S. Patent number 4,067,390) or Hoyer (U.S. Patent number 4,091,869).

Bennett teaches the method of treating a formation comprising heating a selected section of the formation with a heating element (48), wherein at least one end of the element is free to move axially to allow for thermal expansion.

Bennett teaches a hydrocarbon formation, but fails to explicitly teach the coal as called for in claim 2619.

Camacho and Hoyer each suggest that similar processes can be carried out in a number of hydrocarbon formations, including coal. It is apparent that the type of formation is dependent upon design factors, such as location or chemical properties. It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the Bennett process to have used a coal formation, as called for in claim 2619, based on location or chemical properties.

Bennett also teaches the pyrolysis temperature range as called for in claim 2621.

Bennett also teaches the pipe in pipe heater as called for in claim 2622.

Bennett also teaches the flameless distributed combustor as called for in claim 2623.

3. Claims 2619-2621, 2624, 2625, 2627-2642, 2646, 2647, and 2652-2657 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Meurs, et al. (U.S.

Art Unit: 3673

Patent number 4,886,118) in view of Van Meurs, et al. (U.S. Patent number 4,570,715) and either one of Camacho, et al. (U.S. Patent number 4,067,390) or Hoyer (U.S. Patent number 4,091,869).

The 118 reference teaches a method of treating an oil shale formation including heating a selected section of the formation. The 118 reference fails to teach the end of the heater free to move axially.

The 715 reference teaches a similar method which includes a heater with an end free to move axially, in order to allow for thermal expansion.

Camacho and Hoyer each suggest that similar processes can be carried out in a number of hydrocarbon formations, including oil shale or coal. It is apparent that the type of formation is dependent upon design factors, such as location or chemical properties.

It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the method of the 118 reference to have included the heater with an end free to move axially, in order to allow for thermal expansion and as taught by the 715 reference; and to use a coal formation, based on design considerations, such as property rights, chemical properties, or location; as called for in claim 2619.

With regards to claim 2620; the 118 reference teaches superposition.

With regards to claim 2621; the 118 reference teaches the pyrolysis temperature range.

The 715 reference also teaches the mineral insulated cable coupled to a support (23) as called for in claim 2624, thus it would have been further obvious to one of

Art Unit: 3673

ordinary skill in the art at the time of the invention to have the mineral insulated cable coupled to a support as called for in claim 2624.

The 715 reference also teaches the mineral insulated cable as called for in claim 2625, thus it would have been further obvious to one of ordinary skill in the art at the time of the invention to have the mineral insulated cable as called for in claim 2625.

With regards to claim 2627; the 118 reference teaches the heating rate less than about 1°C per day during pyrolysis (see col. 13, lines 15-18; 33 years divided by 300°C is much less than 1°C per day).

With regards to claim 2628; the 118 reference teaches the heating rate less than about 10°C per day during pyrolysis (see col. 13, lines 15-18; 33 years divided by 300°C is much less than 10°C per day); the Pwr equation is nothing more than a standard thermodynamic relation.

With regards to claim 2629; the 118 reference teaches conduction.

With regards to claim 2630; the 118 reference teaches conductivity greater than $0.5 \text{ W/m}^{\circ}\text{C}$ (see col. 14, line 55— $3.25 \text{ mcal/cm-sec-}^{\circ}\text{C}$ is $1.36 \text{ W/m}^{\circ}\text{C}$).

With regards to claims 2631-2642, 2646, 2647; the nature of hydrocarbons produced from such heating is highly variable, and dependent upon many factors, not least of which is the characteristics of the formation. The components of the produced mixture are deemed to be the inherent results of design variables, including formation characteristics.

With regards to claims 2652 and 2653; the increase of permeability is an inherent result of the Van Meurs process.

Art Unit: 3673

With regards to claim 2654; the 118 reference teaches greater than 60% yield.

With regards to claim 2655; the 118 reference teaches at least 7 heat sources.

With regards to claim 2656 and 2657; the 118 reference teaches the triangular patterns.

4. Claims 2643 and 2644 are rejected under 35 U.S.C. 103(a) as being unpatentable over and Van Meurs, et al. 118 and 715 and Camacho or Hoyer as applied to claim 2619 above, and further in view of Stoddard, et al. (U.S. Patent number 4,463,807).

The Tsai and Van Meurs references fail to explicitly teach the ammonia.

It is well known that ammonia is a byproduct of such heating of hydrocarbons. This is taught by Stoddard. It is readily apparent that the amount of ammonia is dependent on many design factors, including the formation characteristics (hydrocarbon content, etc.). It would have been obvious to one of ordinary skill in the art at the time of the invention to have practiced the method of the 118 reference, as modified, in a formation with characteristics allowing greater than 0.05% of the produced mixture to be ammonia, as called for in claim 2643.

With regards to claim 2644; it is well known that one of the chief uses for ammonia is fertilizer; thus it would have been further obvious to one of ordinary skill in the art at the time of the invention to have used ammonia produced from the formation for fertilizer as called for in claim 2644.

Art Unit: 3673

5. Claims 2626 and 2645 is rejected under 35 U.S.C. 103(a) as being unpatentable over Van Meurs 118 and 715 and Camacho or Hoyer as applied to claim 2619 above, and further in view of Elkins (U.S. Patent number 2,734,579).

The Van Meurs references fail to teach the controlling the temperature and pressure wherein the temperature is controlled as a function of the pressure or the pressure is controlled as a function of the temperature.

Elkins teaches controlling the pressure in order to lower the temperature (col. 3, line 46); this is done in order to help prevent overheating. It would have been obvious to one of ordinary skill in the art at the time of the invention to have further modified the process of the 118 reference to have included the pressure greater than 2 bar as called for in claim 2626, or to have included the temperature is controlled as a function of the pressure or the pressure is controlled as a function of the temperature as called for in claim 2645, and as taught by Elkins, in order to prevent overheating.

6. Claims 2648-2651 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Meurs 118 and 715 and Camacho or Hoyer as applied to claim 2619, and further in view of Gregoli, et al. (U.S. Patent number 6,016,867).

The 118 reference fails to teach the altering pressure to inhibit production of hydrocarbons having carbon numbers greater than about 25. The Gregoli reference teaches that in a similar in-situ processes, it is beneficial to use high pressure to break heavy hydrocarbons. It is well known that carbons having carbon numbers greater than about 25 are considered to be heavy; and impede production because they are dense

Art Unit: 3673

and viscous. It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the method of the 118 reference to have included altering pressure to inhibit production of hydrocarbons having carbon numbers greater than about 25, as called for in claim 2648 in order to improve production.

The 118 reference fails to teach the recirculating hydrogen, providing hydrogen, or hydrogenating. The Gregoli reference teaches that in a similar in-situ processes, it is beneficial to use hydrogen to hydrogenate heavy hydrocarbons. It is well known that carbons having carbon numbers greater than about 25 are considered to be heavy; and impede production because they are dense and viscous. It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the 118 method to have included recirculating hydrogen as called for in claim 2649; providing hydrogen as called for in claim 2650; and hydrogenating as called for in claim 2651; in order to reduce the heavy hydrocarbons and to improve production.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Dowling, et al. (U.S. Patent number 4,576,231); Carpenter (U.S. Patent number 2,714,930); Downey, et al. (U.S. Patent number 1,681,523); Kobayashi (U.S. Patent number 4,412,124); Hubert (U.S. Patent number 4,513,816); Van Egmond, et al. (U.S. Patent number 4,704,514); or Eastlund, et al. (U.S. Patent number 4,716,960) show similar heaters.


Art Unit: 3673

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Kreck whose telephone number is (703)308-2725. The examiner can normally be reached on M-F 6:00 am - 3:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Heather Shackelford can be reached on (703)308-2978. The fax phone numbers for the organization where this application or proceeding is assigned are (703)305-3597 for regular communications and (703)305-7687 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)306-4177.

JJK
October 26, 2002


DAVID BAGNELL
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3600